

WE CLAIM:

1. A structure comprising:
a plate;
a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles each having an outer surface; and
a group of light-reflective coatings, each generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate.
2. A structure as in Claim 1 further including a light-reflective layer overlying the light-reflective coatings above the light-emissive region, the light-reflective layer being generally flat where it overlies the light-emissive region.
3. A structure as in Claim 1 wherein the light-reflective coatings consist largely of metal.
4. A structure as in Claim 3 wherein the metal of the light-reflective coatings comprises at least one of beryllium, boron, magnesium, aluminum, chromium, manganese, iron, cobalt, nickel, copper, gallium, molybdenum, palladium, silver, indium, platinum, thallium, and lead.
5. A structure as in Claim 4 wherein the light-emissive particles comprise metal sulfide phosphors.
6. A structure as in Claim 3 wherein the metal of the light-reflective coatings comprises at least one Group IIIB metal.

7. A structure as in Claim 7 further including an electron-emitting device comprising an electron-emissive region for emitting electrons which pass through the light-reflective coatings and cause the light-emissive particles to emit light.

8. A structure as in Claim 7 wherein the light-reflective coatings reduce damage that occurs to the light-emissive particles as electrons emitted by the electron-emissive region impinge on the light-emissive particles.

9. A structure comprising:

a plate;

a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles each having an outer surface; and

a group of coatings comprising at least one Group IIIB metal, each coating generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate.

10. A structure as in Claim 9 further including a light-reflective layer overlying the coatings above the light-emissive regions, the light-reflective layer being generally flat where it overlies the light-emissive region.

11. A structure as in Claim 9 wherein the light-emissive particles comprise metal sulfide phosphors.

12. A structure as in Claim 9 further including an electron-emitting device comprising an electron-emissive region for emitting electrons which pass through the coatings and cause the light-emissive particles to emit light.

13. A structure comprising:

a plate;

a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles for emitting blue light, each light-emissive particle having an outer surface; and

a group of coatings comprising at least one of boron, aluminum, gallium, silver, indium, and thallium, each coating generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate.

14. A structure as in Claim 13 wherein the light-emissive particles comprise metal sulfide phosphors with silver substitution.

15. A structure comprising:

a plate;

a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles for emitting green light, each light-emissive particle having an outer surface; and

a group of coatings comprising at least one of boron, aluminum, copper, gallium, indium, and thallium, each coating generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate.

16. A structure as in Claim 13 wherein the light-emissive particles comprise metal sulfide phosphors with copper substitution.

17. A structure comprising:

a plate;

a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles each having an outer surface; and

a group of coatings comprising at least one of beryllium, boron, magnesium, aluminum, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, gallium, zirconium, niobium, molybdenum, palladium, silver, indium, barium, tantalum, tungsten, platinum, thallium, lead, thorium, and oxide of at least one of magnesium, chromium, manganese, cobalt, nickel, and lead, each coating generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate.

18. A structure as in Claim 17 further including a light-reflective layer overlying the coatings above the light-emissive region, the light-reflective layer being generally flat where it overlies the light-emissive region.

19. A structure as in Claim 17 wherein the light-emissive particles comprise metal sulfide phosphors.

20. A structure as in Claim 17 further including an electron-emitting device comprising an electron-emissive region for emitting electrons which pass through the coatings and cause the light-emissive particles to emit light.

21. A structure comprising:

a plate;

a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles each having an outer surface; and

a group of getter coatings, each generally conformally overlying part of the outer surface of a corresponding one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate.

22. A structure as in Claim 21 further including a light-reflective layer overlying the getter coatings above the light-emissive region, the light-reflective layer being generally flat where it overlies the light-emissive region.

23. A structure as in Claim 21 further including a light-reflective layer overlying the getter coatings above the light-emissive region, the light-reflective layer being perforated where it overlies the light-emissive region.

24. A structure as in Claim 21 wherein the getter coatings are light reflective.

25. A structure as in Claim 21 wherein the getter coatings comprise at least one of magnesium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zirconium, niobium, molybdenum, palladium, silver, barium, tantalum, tungsten, platinum, lead, thorium, and oxide of at least one of magnesium, chromium, manganese, cobalt, nickel, and lead.

26. A structure as in Claim 21 wherein the getter coatings sorb sulfur.

27. A structure as in Claim 21 further including an electron-emitting device comprising an electron-emissive region for emitting electrons which pass through the getter coatings and cause the light-emissive particles to emit light.

28. A structure as in Claim 27 wherein the getter coatings reduce damage that occurs to the light-emissive particles as electrons emitted by the electron-emissive region impinge on the light-emissive particles.

29. A structure comprising:

a plate;

a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles each having an outer surface; and

a multiplicity of intensity-enhancement coatings allocated into m groups respectively comprising a group of first intensity-enhancement coatings through a group of mth intensity-enhancement coatings where m is a plural integer, each first coating generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate, each ith coating generally conformally overlying a corresponding different one of the (i-1)th coatings so as to overlies part of the outer surface of the corresponding light-emissive particle and thereby be spaced apart from where that light-emissive particle overlies the plate, i being an integer varying from 2 to m, each first coating being of lower average refractive index than the corresponding light-emissive particle, each ith coating being of lower average refractive index than the corresponding (i-1)th coating.

30. A structure as in Claim 29 further including a light-reflective layer overlying the intensity-enhancement coatings above the light-emissive region.

31. A structure as in Claim 29 wherein the intensity-enhancement coatings comprise electrically insulating material.

32. A structure as in Claim 29 further including a contrast-enhancement layer overlying the intensity-enhancement coatings, the contrast-enhancement layer appearing dark as seen through the plate from opposite the light-emissive region.

33. A structure as in Claim 32 wherein the contrast-enhancement layer appears largely black as seen through the plate from opposite the light-emissive region.

34. A structure as in Claim 32 wherein the contrast-enhancement layer comprises a group of contrast-enhancement coatings, each generally conformally overlying a corresponding different one of the mth intensity-enhancement coatings.

35. A structure as in Claim 34 wherein each contrast-enhancement coating consists of multiple portions spaced apart from one another.

36. A structure as in Claim 32 further including a light-reflective layer overlying the contrast-enhancement layer above the light-emissive region.

37. A structure as in Claim 29 wherein m is 2.

38. A structure as in Claim 29 wherein m is more than 2.

39. A structure as in Claim 29 further including an electron-emitting device comprising an electron-emissive region for emitting electrons which pass through the intensity-enhancement coatings and cause the light-emissive particles to emit light.

40. A structure as in Claim 39 wherein the intensity-enhancement coatings reduce damage that occurs to the light-

emissive particles as electrons emitted by the electron-emissive region impinge on the light-emissive particles.

41. A structure comprising:

a plate;

a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles each having an outer surface;

a group of intensity-enhancement coatings, each generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate, each intensity-enhancement coating being of lower average refractive index than the corresponding light-emissive particle; and

a contrast-enhancement layer overlying the intensity-enhancement coatings, the contrast-enhancement layer appearing dark as seen through the plate from opposite the light-emissive region.

42. A structure as in Claim 41 wherein the contrast-enhancement layer appears largely black as seen through the plate from opposite the light-emissive region.

43. A structure as in Claim 41 wherein the contrast-enhancement layer comprises a group of contrast-enhancement coatings, each generally conformally overlying a corresponding different one of the intensity-enhancement coatings so as to overlie part of the outer surface of the corresponding light-emissive particle and be spaced apart from where that light-emissive particle is closest to the plate.

44. A structure as in Claim 43 wherein each contrast-enhancement coating consists of multiple portions spaced apart from one another.

45. A structure as in Claim 41 further including a light-reflective layer overlying the contrast-enhancement layer above the light-emissive region.

46. A structure as in Claim 41 wherein the intensity-enhancement coatings comprise electrically insulating material.

47. A structure as in Claim 41 further including:

a light-blocking region overlying the plate and having an opening in which the light-emissive region is at least partially situated, the light-blocking region appearing dark as seen through the plate from opposite the light-blocking region;

an electrically non-insulating layer overlying the light-blocking region, the non-insulating layer having an opening above the light-emissive region; and

a layer of intensity-enhancement material overlying the non-insulating layer.

48. A structure as in Claim 47 wherein the non-insulating layer is sufficiently close to the light-emissive region to remove electrical charge from the light-emissive region.

49. A structure as in Claim 47 further including a light-reflective layer overlying the intensity-enhancement coatings above the light-emissive region, the light-reflective layer also overlying the layer of intensity-enhancement material.

50. A structure as in Claim 49 further including a layer of additional contrast-enhancement material overlying the layer of intensity-enhancement material, the light-reflective layer

further overlying the contrast-enhancement layer and the layer of additional contrast-enhancement material.

51. A structure as in Claim 41 further including an electron-emitting device comprising an electron-emissive region for emitting electrons which pass through the intensity-enhancement coatings and the contrast-enhancement layer and cause the light-emissive particles to emit light.

52. A structure as in Claim 51 wherein the intensity-enhancement coatings reduce damage that occurs to the light-emissive particles as electrons emitted by the electron-emissive region impinge on the light-emissive particles.

53. A structure comprising:

a plate;

a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles each having an outer surface;

a group of intensity-enhancement coatings, each generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate, each intensity-enhancement coating being of lower average refractive index than the corresponding light-emissive particle; and

a group of light-reflective coatings, each generally conformally overlying a corresponding different one of the intensity-enhancement coatings so as to overlie part of the outer surface of the corresponding light-emissive particle and be spaced apart from where that light-emissive particle is closest to the plate.

54. A structure as in Claim 53 further including a light-reflective layer overlying the intensity-enhancement and light-reflective coatings above the light-emissive region, the light-reflective layer being generally flat where it overlies the light-emissive region.

55. A structure as in Claim 53 further including an electron-emitting device comprising an electron-emissive region for emitting electrons which pass through the intensity-enhancement and light-reflective coatings and cause the light-emissive particles to emit light.

56. A structure as in Claim 55 wherein the intensity-enhancement and light-reflective coatings reduce damage that occurs to the light-emissive particles as electrons emitted by the electron-emissive region impinge on the light-emissive particles.

57. A structure comprising:

a plate;

a light-emissive region overlying light-transmissive material of the plate and comprising a plurality of light-emissive particles each having an outer surface; and

a group of contrast-enhancement coatings, each generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that particle is closest to the plate, the contrast-enhancement coatings appearing dark as seen through the plate from opposite the light-emissive region.

58. A structure as in Claim 57 wherein the contrast-enhancement coatings appear largely black and seen through the plate from opposite the light-emissive region.

59. A structure as in Claim 57 each contrast-enhancement coating consists of multiple portions spaced apart from one another.

60. A structure as in Claim 57 further including a light-reflective layer overlying the contrast-enhancement coatings above the light-emissive region.

61. A structure as in Claim 57 further including an electron-emitting device comprising an electron-emissive region for emitting electrons which pass through the contrast-enhancement coatings and cause the light-emissive particles to emit light.

62. A structure as in Claim 57 wherein the intensity-enhancement coatings reduce damage that occurs to the light-emissive particles as electrons emitted by the electron-emissive region impinge on the light-emissive particles.

63. A method comprising:

providing a plurality of light-emissive particles over light-transmissive material of a plate to form a light-emissive region; and

subsequently providing light-reflective material over the light-emissive particles to form a group of light-reflective coatings such that each light-reflective coating generally conformally overlies part of the outer surface of a corresponding different one of the light-emissive particles and is spaced apart from where that light-emissive particle is closest to the plate.

64. A method as in Claim 63 wherein the act of providing the light-reflective material comprises physically depositing the light-reflective material in largely a vacuum environment.

65. A method as in Claim 63 wherein the act of providing the light-reflective material comprises depositing the light-reflective material at a non-zero tilt angle to a line extending generally perpendicular to the plate such that largely none of the light-reflective material accumulates on the plate in spaces between the particles.

66. A method as in Claim 63 further including:

providing an intermediate layer that covers, or nearly covers, the light-reflective coatings and the light-emissive particles;

providing a light-reflective layer over the intermediate layer; and

largely removing the intermediate layer.

67. A method comprising:

providing a plurality of light-emissive particles over light-transmissive material of a plate to form a light-emissive region; and

subsequently providing at least one Group IIIB metal over the light-emissive particles to form a group of coatings such that each coating generally conformally overlies part of the outer surface of a corresponding different one of the light-emissive particles and is spaced apart from where that light-emissive particle is closest to the plate.

68. A method as in Claim 67 further including:

providing an intermediate layer that covers, or nearly covers, the coatings and the light-emissive particles;

providing a light-reflective layer over the intermediate layer; and

largely removing the intermediate layer.

69. A method comprising:

providing a plurality of light-emissive particles over light-transmissive material of a plate to form a light-emissive region; and

subsequently providing getter material over the light-emissive particles to form a group of getter coatings such that each getter coating generally conformally overlies part of the outer surface of a corresponding different one of the light-emissive particles and is spaced apart from where that light-emissive particle is closest to the plate.

70. A method as in Claim 69 wherein the getter coatings are light-reflective.

71. A method as in Claim 69 wherein the act of providing the getter layer comprises depositing the getter material at a non-zero tilt angle to a line extending generally perpendicular to the plate such that largely none of the getter material accumulates on the plate in spaces between the particles.

72. A method as in Claim 69 further including:

providing an intermediate layer that covers, or nearly covers, the getter coatings and the light-emissive particles;

providing a perforated light-reflective layer over the intermediate layer; and

largely removing the intermediate layer.

73. A method comprising:

providing a plurality of light-emissive particles over light-transmissive material of a plate to form a light-emissive region; and

subsequently providing at least one of beryllium, boron, magnesium, aluminum, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, gallium, zirconium, niobium,

molybdenum, palladium, silver, indium, barium, tantalum, tungsten, platinum, thallium, lead, thorium, and oxide of at least one of magnesium, chromium, manganese, cobalt, nickel, and lead over the light-emissive particles to form a group of coatings such that each coating generally conformally overlies part of the outer surface of a corresponding different one of the light-emissive particles and is spaced apart from where that light-emissive particle is closest to the plate.

74. A method as in Claim 73 further including:

providing an intermediate layer that covers, or nearly covers, the coatings and the light-emissive particles;
providing a light-reflective layer over the intermediate layer; and
largely removing the intermediate layer.

75. A method comprising:

providing a plurality of light-emissive particles over light-transmissive material of a plate to form a light-emissive region; and

subsequently providing intensity-enhancement material over the light-emissive particles to form a multiplicity of intensity-enhancement coatings allocated into m groups respectively comprising a group of first intensity-enhancement coatings through a group of m th intensity-enhancement coatings where m is a plural integer, each first coating generally conformally overlying part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate, each i th coating generally conformally overlying a corresponding different one of the $(i-1)$ th coatings so as to overlie part of the outer surface of the corresponding light-emissive particle and thereby be spaced apart from where that light-emissive particle overlies the plate, i being an

integer varying from 2 to m, each first coating being of lower average refractive index than the corresponding light-emissive particle, each ith coating being of lower average refractive index than the (i-1)th coating.

76. A method as in Claim 75 further including providing a light-reflective layer over the intensity-enhancement coatings above the light-emissive region.

77. A method as in Claim 75 further including:

providing an intermediate layer that covers, or nearly covers, the intensity-enhancement coatings and the light-emissive particles;

providing a light-reflective layer over the intermediate layer; and

largely removing the intermediate layer.

78. A method as in Claim 75 further including providing contrast-enhancement material over the intensity-enhancement coatings to form a contrast-enhancement layer that appears dark as seen through the plate from opposite the light-emissive region.

79. A method as in Claim 78 wherein the contrast-enhancement layer comprises a group of contrast-enhancement coatings, each generally conformally overlying a corresponding different one of the mth intensity-enhancement coatings.

80. A method as in Claim 79 wherein the act of providing the contrast-enhancement material entails providing the contrast-enhancement material over each mth intensity-enhancement coating at multiple locations spaced apart from one another over that mth intensity-enhancement coating.

81. A method as in Claim 78 further including providing a light-reflective layer over the intensity-enhancement coatings and the contrast-enhancement layer above the light-emissive region.

82. A method as in Claim 75 wherein the act of providing the intensity-enhancement material includes providing dielectric material over the light-emissive particles to form at least the intensity-enhancement coatings.

83. A method comprising:

providing a plurality of light-emissive particles over light-transmissive material of a plate to form a light-emissive region;

providing intensity-enhancement material over the light-emissive particles to form a group of intensity-enhancement coatings such that each intensity-enhancement coating generally conformally overlies part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate and such that each intensity-enhancement coating is of lower refractive index than the corresponding light-emissive particle; and

providing contrast-enhancement material over the intensity-enhancement coatings to form a contrast-enhancement layer that appears dark as seen through the plate from opposite the light-emissive region

84. A method as in Claim 83 wherein the contrast-enhancement layer appears largely black as seen through the plate from opposite the light-emissive region.

85. A method as in Claim 83 further including providing a light-reflective layer over the intensity-enhancement coatings

and the contrast-enhancement layer above the light-emissive region.

86. A method as in Claim 83 wherein the contrast-enhancement layer comprises a group of contrast-enhancement coatings, each generally conformally overlying a corresponding different one of the intensity-enhancement coatings so as to overlies part of the outer surface of the corresponding light-emissive particle and be spaced apart from where that light-emissive particle is closest to the plate.

87. A method as in Claim 86 wherein the act of providing the contrast-enhancement material entails providing the contrast-enhancement material over each intensity-enhancement coating at multiple locations spaced apart from one another over that intensity-enhancement coating.

88. A method as in Claim 86 wherein the act of providing the light-reflective layer comprises:

providing an intermediate layer that covers, or nearly covers, the contrast-enhancement and intensity-enhancement coatings and the light-emissive particles;

providing the light-reflective layer over the intermediate layer; and

largely removing the intermediate layer.

89. A method as in Claim 83 wherein:

the method includes, before the act of providing the layer of light-emissive particles, (a) providing light-blocking material over the plate to form a light-blocking region which appears dark as seen through the plate from opposite the light-blocking region and which has an opening generally where the light-emissive region is to overlies the plate and (b) providing electrically non-insulating material over the light-blocking

region to form an electrically non-insulating layer having an opening generally where the light-emissive region is to overlie the plate; and

the act of providing the intensity-enhancement material includes providing intensity-enhancement material over the non-insulating layer to form a layer of additional intensity-enhancement material.

90. A method as in Claim 89 wherein:

the light-blocking region extends further away from the plate than does the light-emissive region; and

the act of providing the non-insulating material comprises depositing the non-insulating material over the light-blocking region at a non-zero tilt angle to a line extending generally perpendicular to that plate such that the non-insulating material accumulates only partway down into the opening in the light-blocking region.

91. A method as in Claim 89 further including providing a light-reflective layer over the intensity-enhancement coatings and the layer of additional intensity-enhancement material.

92. A method as in Claim 89 wherein:

the act of providing the contrast-enhancement material includes providing contrast-enhancement material over the layer of additional intensity-enhancement material to form a layer of additional contrast-enhancement material; and

the method further includes providing a light-reflective layer over the contrast-enhancement layer and the layer of additional contrast-enhancement material.

93. A method comprising:

providing a plurality of light-emissive particles over light-transmissive material of a plate to form a light-emissive region;

providing intensity-enhancement material over the light-emissive particles to form a group of intensity-enhancement coatings such that each intensity-enhancement coating generally conformally overlies part of the outer surface of a corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate and such that each intensity-enhancement coating is of lower refractive index than the corresponding light-emissive particle; and

providing light-reflective material over the intensity-enhancement coatings to form a group of light-reflective coatings such that each light-reflective coating generally conformally overlies a corresponding different one of the intensity-enhancement coatings so as to overlie part of the outer surface of the corresponding light-emissive particle and be spaced apart from where that light-emissive particle is closest to the plate.

94. A method as in Claim 93 further including providing a light-reflective layer over the intensity-enhancement and light-reflective coatings.

95. A method comprising:

providing a plurality of light-emissive particles over light-transmissive material of a plate to form a light-emissive region; and

providing contrast-enhancement material over the light-emissive particles to form a group of contrast-enhancement coatings such that each contrast-enhancement coating generally conformally overlies part of the outer surface of a

corresponding different one of the light-emissive particles so as to be spaced apart from where that light-emissive particle is closest to the plate and such that the contrast-enhancement coatings appear dark as seen through the plate from opposite the light-emissive region.

96. A method as in Claim 95 further including providing a light-reflective layer over the contrast-enhancement coatings above the light-emissive region.